VI. *Further Notes on two* Osmia-*species of the* adunca-*group*

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In a paper read on December 5th, 1900, and published in the Society's transactions for the following year, I offered some remarks on such *Osmia*-species of the *adunca*-group as were then known to me, and endeavoured to clear up certain difficulties about their synonymy. Among the forms discussed in that paper were two, of which I knew ♂♂ only. One was so large and striking a form that it surprised me to find it apparently undescribed. But undescribed it seemed to be, and I named it *manicata* n. sp. The other I ventured to identify with a species described by Morawitz under the name *loti*, which name was presently "sunk" by Gerstaecker (owing in my opinion to a mistake), and appears in later works only as a "synonym" —the ♂ of one species, the ♀ of another. Having since become acquainted with the ♀♀ of both these forms, and having taken *manicata*, both sexes together, in several new localities, I offer the Notes here following as a kind of supplement to my former paper.

1. *Osmia loti*, Morawitz.

According to Gerstaecker, *loti*, Mor., ♀, is merely the well-known *caementaria*, Gerst. But Morawitz expressly notes that his species was exclusively attached to *Lotus*, whereas *caementaria*, so far as is known, visits only *Echium*. However much, therefore, the description of *loti* ♀ may have suggested *caementaria*, it was surely a rash assumption on the part of Gerstaecker, who (N.B.) does not seem to have actually examined Morawitz's types, that the two must necessarily be identical. If it can be shown that in or near the region whence LOTI was described a distinct species exists, attached to *Lotus* and not to *Echium*, and having in both sexes the characters assigned by Morawitz

to his *loti*, the whole theory of Gerstaecker seems to me to break down. There is no longer any reason for doubting that Morawitz's ♂ and ♀ belonged to the same species, nor for altering the name in either sex. The name "*morawitzi*, Gerst.," must become a mere synonym of *loti* ♂; and if the laws of priority will allow any species to bear still the name *morawitzi* (as to which experts must decide), it must be applied in future to the *morawitzi* of Perez and Schmiedeknecht—a species which I believe I have shown to be distinct from *loti*, and consequently from "*morawitzi*, Gerst.," which is simply the latter re-named for no good reason!

I now proceed to offer further evidence in support of my view that such a species does in fact exist, and that the name of *loti*, Mor., should therefore be restored to the list of European *Osmia*-species.

In 1900 I knew only that a ♂ *Osmia* answering as well as, and in my opinion even better than, *morawitzi*, Perez, to the original description of *loti* was to be found on the hill called Petit Salève, within a walk of Geneva, but on the French side of the frontier. I had a vague impression that I had taken my specimens on *Lotus*, and was pretty sure that they had *not* occurred on *Echium*. But I abstained from mentioning this point till I could verify it, and rested my argument solely on consideration of the characters assigned to *loti* by its author. Since my paper appeared I have twice been in the neighbourhood of the Salève, but once only when the *Lotus* was in bloom, viz. in the spring of 1908. On the latter occasion I made frequent excursions, sometimes alone, and sometimes in company with my old and revered friend the veteran Swiss hymenopterist, M. Emil Frey-Gessner, of the Geneva University Museum, on purpose to clear up, if possible, the mystery as to the habits of *loti* ♂, and to discover its ♀. In the first object I succeeded, again taking ♂ ♂ with all the peculiar characters described in my former paper, and finding that they *did* occur, as anticipated, only on *Lotus corniculatus*. But we sought in vain for ♀ ♀. And, although on examination of M. Frey-Gessner's cartons containing his captures of recent years, and also in the collections of the late M. Tournier, certain ♀ ♀ from the Salève and elsewhere occurred, resembling, but apparently distinct from, *morawitzi*, Per., some of which were actually ticketed as found visiting *Lotus corniculatus*, there was no actual proof

that these were the ♀ ♀ of my Salève ♂ ♂, though we both thought it very likely that they might be so.

Being obliged to return to England I had to bequeath my problem to M. Frey-Gessner for further investigation, and he continued to make excursions to the Salève with that object in the spring and summer of 1908, which, however, met with no success, till at last on June 28th, in company with Dr. H. A. Schulz, he found both sexes of an *Osmia* visiting the *Lotus*—the ♂ ♂ agreeing with those taken by myself, and the ♀ ♀ with those which we had expected would prove to be their partners! He has recorded these captures, making kind allusion to my paper of 1901 and expressing his agreement with its views, in the Transactions of the Swiss Entomological Society (July 1909), and has also most kindly presented me with several of the ♀ ♀, which now lie before me.

O. loti ♀ much resembles *caementaria* in sculpture and pilosity, and like that species has pale calcaria. But it is even more like *morawitzi*, Per., and might easily be mistaken for it without most careful examination. It seems, however, to be a smaller insect than either *morawitzi* or *caementaria*—at least I have seen no specimen of either sex more than 8 mm. long, a size which is generally a good deal exceeded in both the other species. The best character, however, by which it can be at once separated from either *morawitzi* or *caementaria*, and which originally led M. Frey-Gessner to set it apart in his collection, is to be found in the sculpture of the clypeus. This in the other species is evenly punctured all over, but in *loti* is bisected longitudinally by a smooth and shining carina which is uniformly developed, and quite unmistakable when once noticed, in every specimen that I have seen. Nothing of the sort seems to exist in any other ♀ ♀ of the group. And this fact, coupled with the characters of the ♂ antennae and 6th ventral-plate, which my former paper describes in detail, to my mind fully justifies the retention of this as a distinct species.* Unfortunately Morawitz says nothing as to the clypeus of his *loti* ♀; but, notwithstanding this omission, I feel practically certain that his species

* M. Frey-Gessner has lately written to me that he finds the usual habitats of *morawitzi* and *loti* differ, the former occurring chiefly on the higher Alps, the latter on mere hills and in the valleys. Yet I have also taken *morawitzi* in North Italy near the sea and at no great height above it, I think on *Echium*.

and the present were the same. He gives *no* character for either sex that I cannot recognise in the Salève insects; and his statement that the species is attached exclusively to *Lotus* is borne out by all the facts that have come before me.

2. *Osmia manicata*, Morice.

In 1900 I could only record two examples of this species (both ♂♂), one from Algeria, the other taken by the late Sir S. S. Saunders probably in the Ionian Islands. I have now quite a long series of both sexes, and can record it from the following additional localities: Spain (Granada), South Italy (Taranto and Brindisi), Greece (neighbourhood of Athens and Olympia, both sexes common in May 1901), Asia Minor (Smyrna ♂ and ♀). Its range therefore extends over the whole length of the Mediterranean.

O. manicata, in both sexes, is generally at once recognisable simply by its great size. Its length may extend to 13 or even 14 mm. (that of *adunca* only from 9 to 11). Its breadth is still more remarkable, quite twice (!) that of a normal *adunca* in all my specimens. This regular difference in size, and still more in proportions, makes it perfectly easy to separate examples of the two forms; and, as shown in my former paper, the ♂♂ differ entirely in the structure of the concealed 6th ventral-plate. In the ♀♀, however, I have quite failed to recognise any points of detail on which a reliable "character" for their separation can be based. The calcaria, indeed, are usually (perhaps always) somewhat rufescent in *manicata* (black in *adunca*), and the antennae also tend in the former species to show rufescence beneath, but the extent of this rufescence varies. The normal number of *wing-hooks* seems to be greater in *manicata* than in *adunca* (13–14 against 11–12); but, as we commonly find large and small examples of a single species differing in this way, I have some hesitation in suggesting that such a difference may be here "specific." Still when, as in my collection, a long series of *manicata* and another of *adunca* from many localities are exhibited side by side, the general "habit" of the two forms is so obviously dissimilar that no amount of common characters can make them seem identical; and there can at least be no doubt that the ♂♂ differ markedly and *regularly* (for I have dissected many specimens of both) in the paradoxically developed 6th ventral-plate of the

abdomen. I feel justified therefore in upholding *manicata* as a form differing sufficiently from *adunca* to deserve a separate name.

Being certainly no rarity in several Mediterranean countries, it probably figures as a variety of *adunca* in many collections, as it did in my own, until I examined the concealed ♂ ventral segments.

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